Institutional Programmatic Support ARC Perspective

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September 26, 2006

Institutional Programmatic Support (IPS) Audit

- HQ Office of Safety and Mission Assurance (OSMA) conducted an IPS audit of ARC July 24 – July 28.

- Audit Coverage
  - Code D – Office of Director
  - Code Q – Safety, Environmental, and Mission Success
  - Code P – Office of Director of Project Management and Engineering
  - Code A – Office of Director of Aeronautics
  - Code S – Office of Director of Science
  - Code T – Office of Director of Exploration Technology
  - Code J – Center Operations Directorate

Institutional Programmatic Support (IPS) Audit

- **Programs/Projects Audited**
  - SOFIA
  - Kepler
  - CEV TPS
  - GeneSat
  - Mission Control Technologies
  - Mars Science Lab
  - Nano Chem Sensor
  - FIT
- **Facilities Audited**
  - Unitary Plan Wind Tunnel
  - Manufacturing Shop (N220)
  - Vertical Motion Simulator

Institutional Programmatic Support (IPS) Audit

- Total Findings: 58

Focus Area	Critical Non-Compliances	Non-Compliances	Observations	Commendations
SMA Management	**0**	**1**	**2**	**0**
Risk Management	**0**	**4**	**1**	**0**
Software	**0**	**5**	**0**	**0**
Quality Assurance	**0**	**12**	**20**	**0**
Systems Safety	**0**	**9**	**4**	**0**
TOTAL	**0**	**31**	**27**	**0**

Main IPS Findings

- Outdated Work Instructions and Center Documents
- Lack of Defined Training for SMA Personnel
- Not All Projects/Activities have SMA Support
- SW Assurance Gap Plan not Updated
- One-Deep in Many SMA Areas of Expertise

IPS – Areas of Improvement

- **Auditor Expectations vs. NPD/NPR Requirements**
  - Auditors seemed to expect a Center Level document corresponding to every NPD or NPR - this is not an Agency requirement
    › Working directly from Agency requirements is often more effective and helps increase awareness of Agency level documents
  - Auditors' interpretation of NPD/NPR requirements occasional resulted in the introduction of terms and conditions that are not actually in the requirements
    › For example the finding - Mishap Reporting "The IRIS system is not utilized unilaterally for input of mishaps and close calls at Ames Research Center (ARC)." The NPR does not require "unilateral" use by all employees – ARC has a center-wide process that collects and directs information to the IRIS coordinator who ensures all ARC mishaps and close calls are entered into IRIS.

IPS Areas of Improvement

- **Matching a Finding to an NPD/NPR Requirement**
    - Auditors made valid observation, but difficult to tie this in with NPD/NPR requirements – in such cases the finding should have been classified as an Observation, not a Non-Conformance. Example: Out of date ARC work instructions cited against 8730.5 – NASA Quality Assurance Program Policy.

- **ARC SME's/POC's Need to be Available to the Audit Team**
    - Some findings were simply because the POC's were not available, fill-in personnel did not have access to the appropriate objective evidence.

IPS – Value Added

- **Findings Provide SMA with an "Outside" View**
  - Provided Impetus to Address Long Standing Issues
    - › Can turn 'back burner' actions into 'front burner' actions through visibility
  - Management Listens to New Voices – potential for addressing lack of resources
  - Helped jumpstart interaction with Organizations at the Center that historically kept SMA at arms length

- **Auditor Inputs and Interaction with Staff are Value Added**
  - Interaction with the auditors provided valuable insight and information to SMA staff
    - › Valid assistance to solving current issues
    - › Establishes network with peers
    - › Provides access to agency resources and knowledge base

IPS – Value Added

- Useful Initiatives - NCAS Task to Look at Small Spacecraft
  - ARC attempting to move into Small Spacecraft
    - › Lower cost, higher risk missions
  - Guidance needed on how SMA requirements flow down and apply to low cost high risk missions
    - › Working to develop guidance based on risk classifications A, B, C, D for payloads
    - › Useful for both SMA and Project Managers in defining SMA requirements and providing rationale to Project Managers

Summary

- Auditors need to understand that Center processes may comply even though the approach is not what they are looking for.
  - Using Agency NPDs/NPRs in lieu of having a Center equivalent.
  - Center systems that feed into Agency systems (e.g. IRIS)

- The Audit Process IS Value Added.
  - Auditors instructed to provide help and they do!
  - Independent voice is a benefit
  - Networking with peers
  - Beneficial Efforts (e.g. NCAS task)